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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/646,590

08/22/2003

Takashi Kobayashi

FUJI:200A

9945

7590

09/08/2004

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EXAMINER

MANDALA, VICTOR A

ART UNIT

PAPER NUMBER

2826

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/646,590

Applicant(s)

KOBAYASHI ET AL.

Examiner

Victor A Mandala Jr.

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 34-113 and 116-118 is/are pending in the application.
- 4a) Of the above claim(s) 96-113 and 116-118 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 57,59,61,63,65,67,71,74,77,80,83,86,89,92 and 95 is/are allowed.
- 6) ☒ Claim(s) 34-56,69,70,73,75,76,81,82,87,88,90 and 91 is/are rejected.
- 7) ☒ Claim(s) 58,60,62,64,66,68,72,73,78,79,84,85,93 and 94 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/26/04 & 11/21/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 96-113 & 116-118 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 6/7/04.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 34-36, 38, 40, 42, 44, 46, 58, 62, 69, & 87 provisionally rejected under the judicially created doctrine of double patenting over claims 22-24, 26, 28, 30, 32, 34, 37, 38, & 41 of copending Application No. 10/170216. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: The claims of the copending Application teach all of the same elements as this Application, but the independent claim 22 of the copending Application is written in a different order than this Applications claim 34; thus it is obvious that it is teaching the same device.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

Subject to the following paragraph, a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

3. Claims 35 & 36 are rejected under 35 U.S.C. 112, fourth paragraph, for not incorporating by reference all the limitations of the claim, which it refers.

Since claim 34 discloses n is expressed by $n = 1.0 \times V_{br}/100$, where V_{br} is the breakdown voltage, it is unclear why claim 35 discloses an n value $n = 1.5 \times V_{br}/100$, where V_{br} is the breakdown voltage and is different from that of claim 34.

It is also unclear why claim 36 discloses an n value $n = 6.0 \times V_{br}/100$, where V_{br} is the breakdown voltage and is different from that of claim 34.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 34, 37-56, 69, 70, 73, 75, 76, 81, 82, 87, 88, 90, and 91 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,573,066 Whight.

4. In regards to claim 34, Whight shows all the elements of the claimed invention in Figures 1 and 3. It is a semiconductor device, comprising; a semiconductor chip (10), a low electrical resistance layer (13) of a first conductivity-type (n-type) on a bottom portion of the semiconductor chip; a breakdown-voltage sustaining layer (12) of the first conductivity type above the low electrical resistance layer; a well region (11) of the second conductivity type (p-type) in a surface portion of the breakdown voltage sustaining layer; and guard rings (1-6) of the second conductivity type in the surface portion of the semiconductor chip, the guard rings surrounding the well region, wherein the number of the guard rings (6 guard rings) being more than the number n ($n = 5$ when $V_{br} = 500$ volts (col. 8, lines 41-46)) expressed by $n = 1.0 \times V_{br}/100$, where V_{br} is the breakdown voltage.

Also, Whight discloses the number of the guard rings (15 guard rings) being more than the number n ($n = 10$ when $V_{br} = 1000$ volts (col. 9, lines 14-23)) expressed by $n = 1.0 \times V_{br}/100$, where V_{br} is the breakdown voltage.

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5. In regards to claims 37-56, 69, 70, 73, 75, 76, 81, & 82, Whight further discloses the difference I2-I1 between the spacing I2 ($d(2) = 2 \mu\text{m}$) between a first of the guard rings (1), which is nearest to the well region (11) and a second of the guard rings (2), which is second nearest to the well region, (11) and the spacing I1 ($d(1) = 2 \mu\text{m}$) between the well region (11) and the first guard ring (1) is $1 \mu\text{m}$ or less ($0 \mu\text{m}$). Further detailing of the claimed limitations can be seen in Table 1 Col. 6, in combination with the above explanations.

6. In regards to claim 87, 88, 90, & 91 Whight further discloses the number of the guard rings is 6, and the width of a first of the guard rings (1) ($w(1) = 25 \mu\text{m}$), which is nearest to the well region (11), is wider than the width of a fifth of the guard rings (5) ($w(5) = 10 \mu\text{m}$), which is fifth nearest to the well region (11).

Allowable Subject Matter

7. Claims 58, 60, 62, 64, 66, 68, 72, 73, 78, 79, 84, 85, 93, & 94 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: The first major difference in the claims not found in the prior art of record is the spacing between the well region and a first of the guard rings, which is nearest to the well region is, $1 \mu\text{m}$ or less. The second major difference in the claims not found in the prior art of record is the spacing between the well region and a first of the guard rings, which is nearest to the well region, is $d1/4$ or less, where $d1$ is shallower one of the junction depth of the well region and the junction depth of the guard rings.

9. Claims 57, 59, 61, 63, 65, 67, 71, 74, 77, 80, 83, 86, 89, 92, & 95 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor A Mandala Jr. whose telephone number is (571) 272-1918. The examiner can normally be reached on Monday through Thursday from 8am till 6pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. **NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800**

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VAMJ
9/2/04